

# New Fan Qualifications

## *Model 5802i and Model 5810i Blowers*

On March 8, 2012, Simco-Ion Technology Group announced a fan change for the Model 5802i and Model 5810i Ionizing Blowers. The existing Panaflo Fan used in these products for over 5 years has been discontinued from the manufacturer, NMB Technologies. Alternate fans were considered with the decision to use an NMB Technology DC Axial Fan as the replacement in these blowers. We provide results of particle and discharge time tests for our Model 5802i and Model 5810i Ionizing Blowers.



Model 5802i



Model 5810i





## Blower Cleanliness

The cleanliness class specification for Model 5802i and Model 5810i is ISO Standard 14644-1 Class 4 (Federal Standard 209E Class 10).

Particle cleanliness testing was implemented in 3 steps:

1. **A pre-commitment qualification.** Two incoming fans were randomly selected from an incoming shipment. Each fan was tested for particles over a three day period. In this example, both fans were within ISO Standard 14644-1 Class 3. (Federal Standard 209E Class 1).

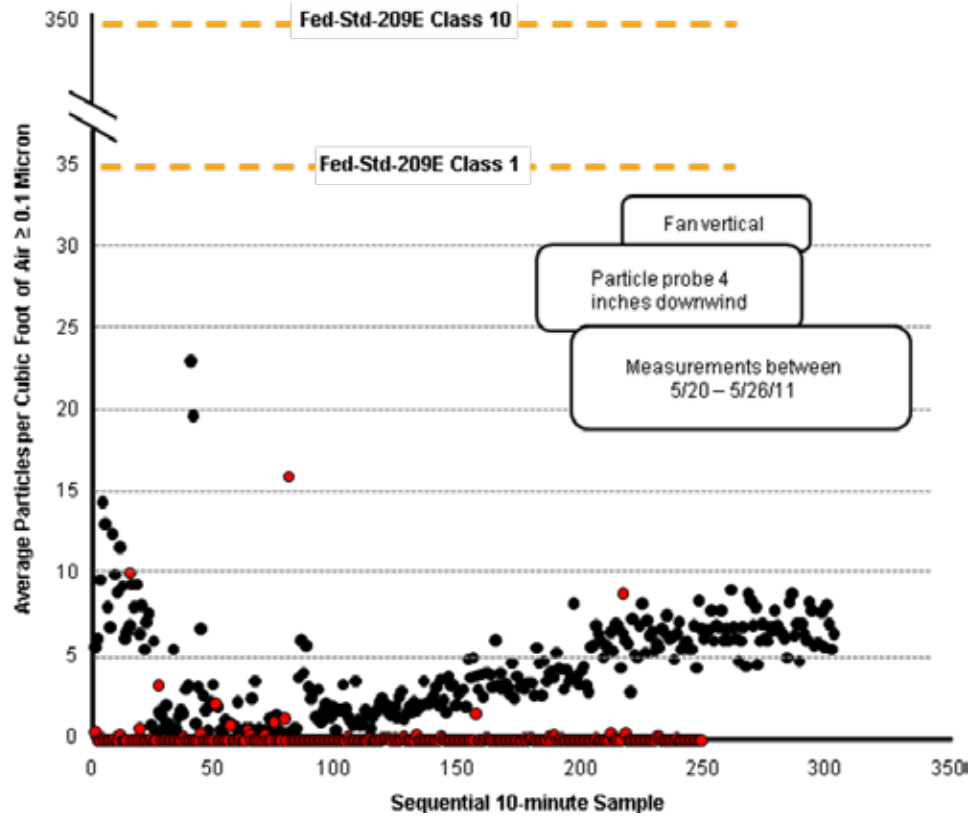


Figure 1. Particles  $\geq 0.1$  Micron for NMB 5-Inch Fans #5 and #6



- 2. **A long-term run test.** Five fans were selected and taken from a different shipment. A short particle test was performed to confirm that cleanliness was within ISO Standard 14644-1 Class 4 (Federal Standard 209E Class 10). The five fans were operated continuously for three months in a nominal ISO Class 5 (Federal Class 100) environment. At the conclusion of three months, these five fans were particle tested. All fans were within ISO Class 4 (Federal Class 10) and some were within ISO Class 3 (Federal Class 1).

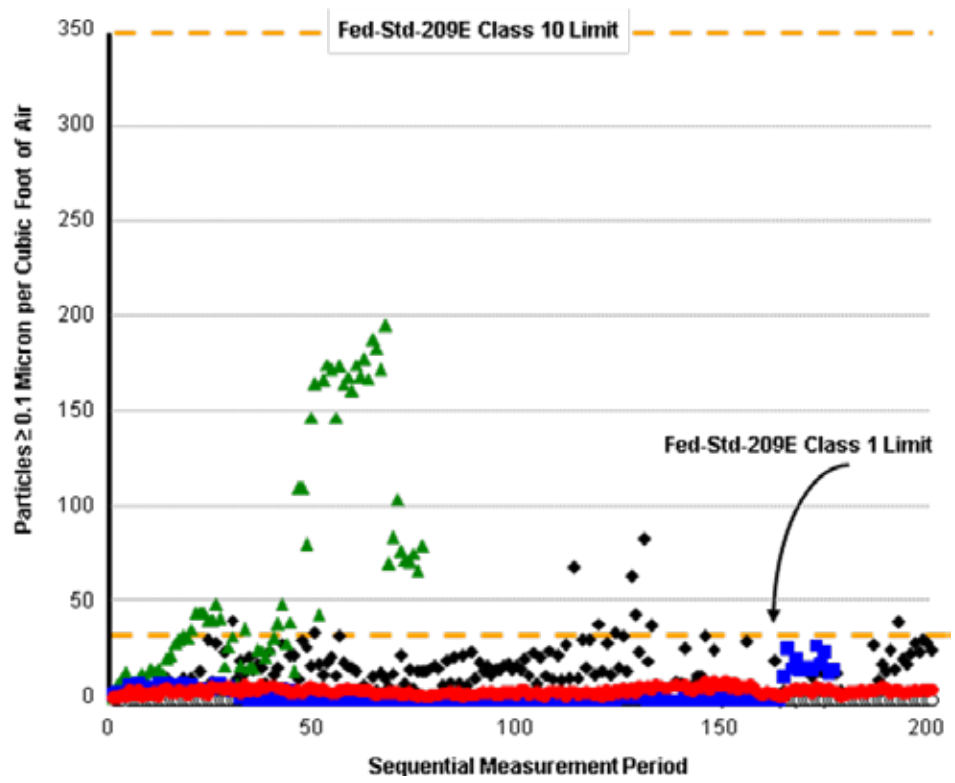


Figure 2. Particles  $\geq 0.1$  Micron per Cubic Foot of Air vs. Sequential Measurement Period. Probe was 4 Inches Below the 5810i / 5802i Replacement Fans. Five fans were tested, and shown in different colors.



- 3. To measure four of the NMB DC Axial fans, each within a Model 5802i Benchtop Ionizing Blower. Results were within ISO Standard 14644-1 Class 4 (Federal Standard 209E Class 10) and near the ISO Class 3 (Federal Class 1) limit.

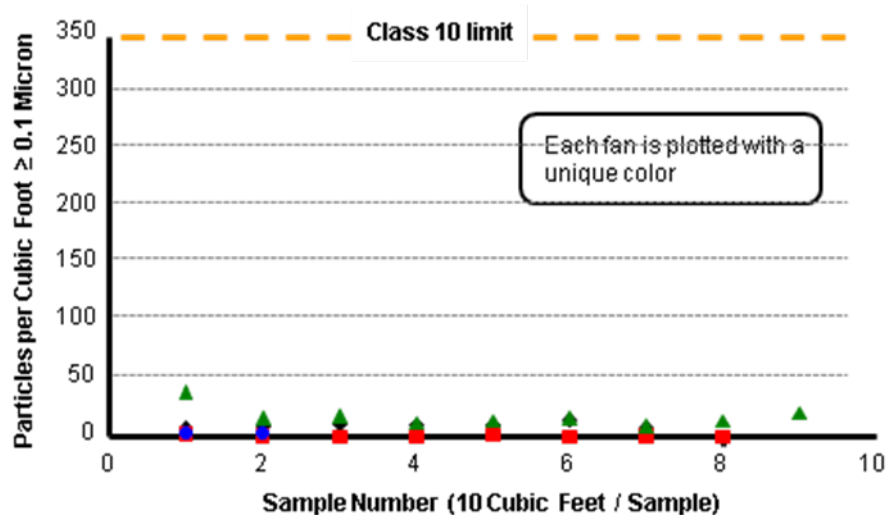


Figure 3. 5802i Particles per Cubic Foot of Air,  $\geq 0.1$  Micron Measured 4 Inches Below the Fan Stacks for 4 Fans (2 Units).

# Discharge Time

## Model 5802i Benchtop Ionizing Blower

The static discharge time specification for the Model 5802i Benchtop Ionizing Blower is  $\pm 1000-100V$  discharge under 1 second at 1 foot tested in-line from the center of the blower face. Results were obtained running the blower(s) at high fan speed and in accordance with ANSI/ESD STM 3.1 2006.

*Test conditions with NMB Technology DC Axial Fan*

Model 5802i Benchtop Blower on high 25°C, 39% RH Decay from 1000-100V 280A CPM SN060708.

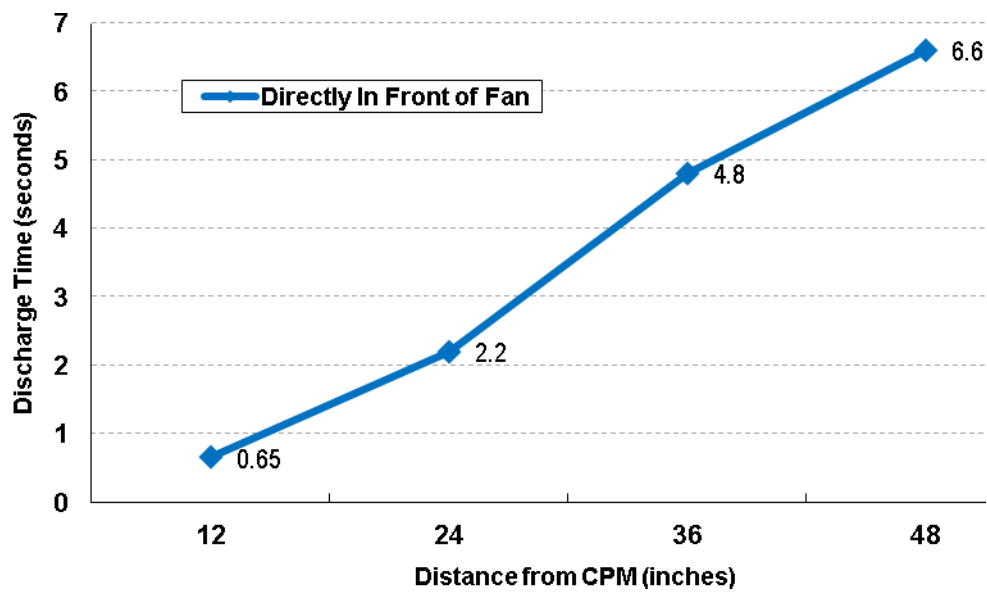


Figure 4. Model 5802i with NMB DC Axial Fan - Discharge Time

## Model 5810i Benchtop Ionizing Blower

The static discharge time specification for the Model 5810i Overhead Ionizing Blower is  $\pm 1000$ -100V discharge under 3 seconds at 18 inches tested directly in-line across the blower face. Results were obtained running the blower(s) at high fan speed and in accordance with ANSI/ESD STM 3.1 2006.

*Test conditions with NMB Technology DC Axial Fan*

Model 5810i Overhead 3-Fan Blower on high 25°C, 39% RH Decay from 1000-100V 280A CPM SN060708.

Model 280A CPM plate is 6 inches above workbench. Test points are directly underneath face of blower.

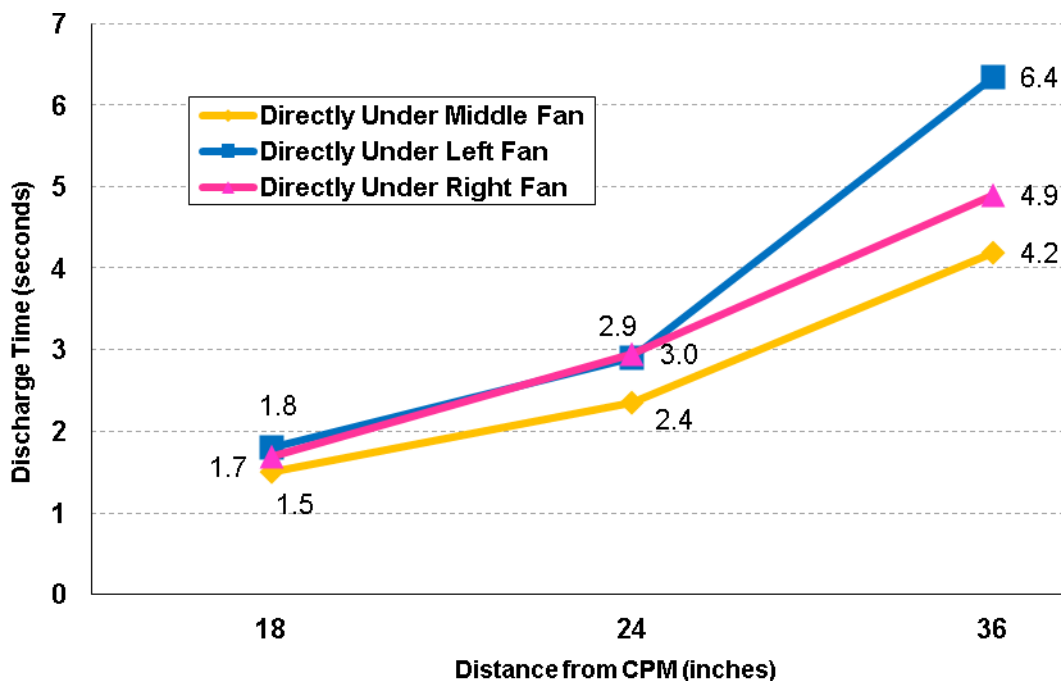


Figure 4. Model 5810i with NMB DC Axial Fan - Discharge Time



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